

NON-PUBLIC?: N  
ACCESSION #: 9506010001  
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Catawba Nuclear Station, Unit 2 PAGE: 1 OF 4

DOCKET NUMBER: 05000414

TITLE: Manual Reactor Trip Due to Loss of Main Feedwater  
EVENT DATE: 05/01/95 LER #: 95-005-00 REPORT DATE: 05/24/95

OTHER FACILITIES INVOLVED: N/A DOCKET NO: 05000

OPERATING MODE: 1 POWER LEVEL: 14

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR  
SECTION:  
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:  
NAME: D.P. Kimball, Safety Review  
Group Manager TELEPHONE: (803) 831-3743

COMPONENT FAILURE DESCRIPTION:  
CAUSE: SYSTEM: COMPONENT: MANUFACTURER:  
REPORTABLE NPRDS:

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

On May 1, 1995, at 1603 hours, Unit 2 was in Mode 1, Power Operation at 14%, when the Main Turbine tripped due to loss of both Main Feedwater (CF) System Pumps. Following the Turbine trip, the Reactor was manually tripped due to loss of Main Feedwater. A CF System isolation signal was generated as a result of a Reactor Trip with low Reactor Coolant (NC) System Average Temperature (T-ave). The Auxiliary Feedwater (CA) System motor driven pumps autostarted as expected due to loss of Main Feedwater. The CA System autostart caused NC System T-ave to cooldown below 553 degrees Fahrenheit which resulted in the Steam Dump System to isolate on a P- 12 permissive (Lo-Lo T-ave) to prevent excessive cooldown of the NC System. The root cause of this event is attributed to work practices, system alignment not properly verified by the Non-Licensed Operator (NLO) when aligning the Condensate System. Corrective Actions included communication by Operations Management of management expectations for human performance improvement to all Operations work groups and

appropriate corrective action was taken with the NLO involved in this incident.

END OF ABSTRACT

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## BACKGROUND

The Condensate EIIS:KA! (CM) System cleans and heats condensed steam from the main condenser EIIS:COND! hotwell to improve cycle efficiency before delivering the water to the feedwater system for delivery to the Steam Generators EIIS:SG! (S/Gs). Hotwell pumps EIIS:P! take suction from the condenser hotwell and discharge flow through various components to the suction of the condensate booster pumps. Condensate booster pumps discharge flow through various components to the suction of the Main Feedwater Pumps.

The Main Feedwater EIIS:SJ! (CF) system consists of two steam driven feedwater pumps, two stages of high pressure feedwater heaters EIIS:HTR! (A and B), piping EIIS:PSP!, valves EIIS:V! and instrumentation. Normally, both feedwater pumps will be operating with each pump handling half the feedwater flow. Downstream of the feedwater pumps, the feedwater passes through two stages of high pressure heaters to a final header where the temperature is equalized. The feedwater is then admitted to the steam generators through four steam generator feedwater lines, each of which contains a control valve and a flow nozzle EIIS:NZL!.

## EVENT DESCRIPTION

April 28, 1995

"F" and "G" Feedwater heaters had automatically isolated due to a heater level transient as a result of the Unit 2 Reactor EIIS:RCT! Trip that occurred on April 27, 1995. The inlet and outlet valves for the heaters were closed with the bypass valve open.

May 1, 1995

1500 Unit 2 was in Mode 1, Power Operation at 14%, with Reactor Coolant EIIS:AB! System average temperature (T-ave) at 560 degrees Fahrenheit.

1530 A Non-Licensed Operator (NLO) was dispatched to place "F" and "G" Feedwater heaters back in service and then

close the valve that bypasses flow around the feedwater heaters.

1600 The NLO arrived at the "F" and "G" Feedwater heater control panel EIIS:PL!. The NLO opened the heater outlet valves to the intermediate position. The NLO then

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positioned the heater bypass valve to the intermediate position. The bypass valve indicated the intermediate position but the valve was actually almost closed, isolating Condensate system flow.

1602:35 Condensate Booster Pumps "B" and "C" started on low Feedwater Pump suction pressure.

1602:54 Condensate Booster Pumps tripped on low suction pressure.

1603:10 Feedwater Pumps tripped on loss of suction pressure.

1603:11 Main Turbine EIIS:TRB! tripped on loss of Feedwater Pumps. Auxiliary Feedwater EIIS:BA! (CA) System Motor EIIS:MO! Driven Pumps autostarted due to loss of Main Feedwater.

1603:18 Control Room Operator manually tripped the Reactor due to loss of Main Feedwater. Feedwater System isolation signal was generated due to Reactor Trip with low T-ave (below 564 degrees Fahrenheit).

1605 T-ave had decreased to 553 degrees Fahrenheit due to cooldown caused by CA System, resulting in the Steam Dump EIIS:JI! System isolating as a result of Lo-Lo T-ave (P-12 Permissive).

1630 Plant stabilized at no load conditions with Unit 2 in Mode 3, Hot Standby.

## CONCLUSION

The Control Room Operators manually tripped the Reactor on loss of Main Feedwater. The root cause of the loss of Main Feedwater is attributed to

work practices, system alignment was not properly verified by the NLO when aligning the Condensate System. The NLO closed the bypass valve for "F" and "G" Feedwater heaters prior to opening the inlet valves causing the Condensate System to be isolated. Appropriate corrective action was taken with the NLO involved.

Due to this event, as well as other recent events that involved less than adequate Work Practices, Station and Operations Management met with all Operations Shift Managers on May 8, 1995. During this meeting, these events were reviewed and specific expectations for human performance improvements were discussed. Following this meeting, the Operations Superintendent held group "time outs" with all Operations work groups to reinforce expectations for human performance improvements.

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A review of the reportable events which have occurred during the 24 months prior to this event indicated that less than adequate work practices involving verification of system alignment by Operations is a recurring problem. LER 414/93-003 involved failure to adequately evaluate the impact of unusual steam alignments resulting in a P-12 actuation. LER 413/94-008 involved failure to verify proper return position of a valve in the Nuclear Service Water EH&S:BI System.

#### CORRECTIVE ACTIONS

##### IMMEDIATE

1) Control Room Operators manually tripped the Reactor due to loss of Main Feedwater.

##### SUBSEQUENT

1) Appropriate corrective action was taken with the NLO involved in this event.

2) The Operations Superintendent has held "time out" sessions with all Operations work groups to reinforce management expectations for human performance improvement.

3) Management expectations for human performance improvement was communicated to all OSMs.

#### SAFETY ANALYSIS

Unit 2 was in Mode 1 at 14% power when the Control Room Operators

manually tripped the Reactor due to loss of Main Feedwater. All control rods EIIS:ROD! inserted normally in the core. No primary or secondary Power Operated Relief Valves EIIS:RV! or Safety Valves lifted during the transient. Control Room Operators responded properly to stabilize primary and secondary systems. All safety systems responded as expected during this event. The Reactor Trip that occurred from Rated Thermal Power on loss of feedwater flow is bounded by the analysis for Turbine Trip as described in Chapter 15 of the FSAR.

The health and safety of the public were not affected by the event.

ATTACHMENT TO 9506010001 PAGE 1 OF 1

Duke Power Company (803)831-3000  
Catawba Nuclear Station  
4800 Concord Road  
York, SC 29745

DUKE POWER

May 24, 1995

Document Control Desk  
U. S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Subject: Catawba Nuclear Station  
Docket No. 50-414  
LER 414/95-005

Gentlemen:

Attached is Licensee Event Report 414/95-005 concerning MANUAL REACTOR TRIP DUE TO LOSS OF MAIN FEEDWATER.

This event was considered to be of no significance with respect to the health and safety of the public.

Very truly yours,

D. L. Rehn

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Attachments

xc: Mr. S. D. Ebnetter Marsh & McLennan Nuclear  
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Mr. R. J. Freudenberger  
NRC Resident Inspector  
Catawba Nuclear Station

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